System Manual:

This program is meant to calculate the users BAC and to output it in a useful chart using only the weight of the user and the number of minutes it has been since the user has had a drink.

Before the functions:

Within the program we first include iostream, iomanip, and string libraries so that we are able to properly code this program. Next the functions needed for this program are declared with all of their correct parameters. After these the global constant variables given to us to use are declared.

Main function:

various variables are first declared that are used or are from debugging. Bellow the variables there are comments outlining some of the key ideas needed to complete this program including important numbers as well as an outline of the equation used. Next the user is asked for values that represent there weight and the time since their last drink and these values are set to integers. A character variable and a bool variable are then declared and the function promptForMorF is called and set to the character variable just declared. This character is then used to set the bool to true or false depending on the value of the character. In this case, the character variable is set to M or F and the bool is set to true if the character variable is M and false if it is F. Using the bool and the information gathered from the user, the showImpairmentChart function is Called to print out the users unique chart. The main function then also has cout and cin statements to allow the user to manually end the program.

PromptForMorF function:

This function starts by sending out a message asking for the user to enter the characters M or F based on their gender. The user entered character is then set to a character variable, this variable is then judge using an if statement to check if it is either of the characters the message was asking for, if it is, then the character is returned, if it is not then the function calls itself so that the user is again prompted for a correct character.

ShowImpairmentChart function:

the double variables male and female are declared to hold the results of parameter elements later on. An if statement checks if the user is male or female based on a bool parameter element, then the function displays a summary of the information given so that it resembles the example given to us the students. Then using a for loop the function displays formatted information by calling the functions “computeBloodAlcoholConcentration” and “impairment”.

ComputerBloodAlcoholConcentriation function:

double variables are declared representing the maleBAC and femaleBAC given values and are set accordingly. The function then checks if the number of drinks the user has had is zero, if the user has had zero drinks then the duration is also set to zero to avoid negative outputs. The program then using the equation ((number of drinks / weight of user) * maleBAC or femaleBAC - (.1 * number of minutes since last drink * 0.0025)) to set the parameter elements for maleBAC and femaleBAC to the result of the equation. The function then checks if the result was negative, if it is negative then it just sets the result to zero, otherwise the result stays the same.

Impairment function:

This function simple takes a double parameter element that represents the user's BAC and compares it to the global variables declared previously, and returns the correct string accordingly.